

Figure 1

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Bi	Ca	Cd	Ce	Co	Cr	Cu	Eu	Fe	Gd	In	Ir	La	Mn	Ni	Re	Ru	TiO	Yb	Zn	Avg TON
0	0	0	1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1802
1	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1711
1	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1698
0	0	0	0	0	0	1	0	0	1	0	0	0	1	0	0	0	0	0	0	1671
1	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1670
0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1645
0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1	0	0	1645
0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	1	0	0	1645
0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	1645
1	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1645
0	0	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	1623
0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	0	0	0	1621
1	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1614
0	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1578
1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1550
0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1539
0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1530
0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	1521
1	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1516
1	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	1509
0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1506

FIGURE 2

Metal	Electro-negativity	Atomic Radius	Covalent Radius	Ionization Potential	Atomic Ionization Potentials				Electron Affinity
					I	II	III	IV	
Bi	1.67	1.7	1.46	7.29	7.29	16.16	25.56	45.3	0.95
Ca	1.04	1.97	1.74	6.11	6.11	11.9	50.908	67.1	0.18
Cd	1.46	1.54	1.48	9	8.99	16.91	37.48	NA	NA
Ce	1.06	1.81	1.65	5.53	5.47	10.85	20.2	36.72	NA
Co	1.7	1.3	NA	7.87	7.86	17.06	33.5	51.3	0.662
Cr	1.56	1.27	NA	6.76	6.76	16.5	30.96	49.1	0.666
Cs	0.86	2.67	2.25	3.89	3.89	25.1	NA	NA	0.47
Cu	1.75	1.28	1.38	7.73	7.726	20.29	36.83	55.2	1.235
Eu	1.01	2.04	1.85	5.68	5.67	11.25	24.9	NA	NA
Fe	1.64	0.68	0.72	7.9	7.87	16.18	30.65	54.8	0.151
Ga	1.82	1.4	1.26	6	6	20.51	30.71	64	0.3
In	1.49	1.66	144	5.79	5.78	18.87	28.03	54	0.3
Ir	1.55	1.36	NA	9	9.1	NA	NA	NA	1.565
La	1.08	1.86	1.69	5.61	5.57	11.06	19.1	NA	NA
Mn	1.6	1.26	NA	7.43	7.43	15.64	33.66	51.2	NA
Ni	1.75	1.24	NA	7.63	7.63	18.17	35.17	54.9	1.156
Pb	1.55	1.75	1.47	7.417	7.416	15.032	31.94	42.32	NA
Re	1.46	1.37	NA	7.87	7.9	NA	NA	NA	0.15
Rh	1.45	1.34	NA	7.46	7.46	18.08	31.06	NA	1.137
Ru	1.42	1.33	NA	7.37	7.37	16.76	28.47	NA	1.05
Sb	1.82	1.5	1.38	8.641	8.64	16.53	25.3	44.2	NA
Sn	1.72	1.5	1.41	7.344	7.34	14.63	30.5	40.7	NA
Ti	1.32	1.45	1.36	6.82	6.82	13.58	27.49	43.26	0.079
Yb	1.06	1.93	1.7	6.22	6.25	12.17	25	NA	0.5
Zn	1.66	1.38	1.31	9.39	9.394	17.964	39.722	59.4	NA
Zr	1.22	1.6	1.48	6.835	6.84	13.13	22.99	34.34	NA

FIGURE 3

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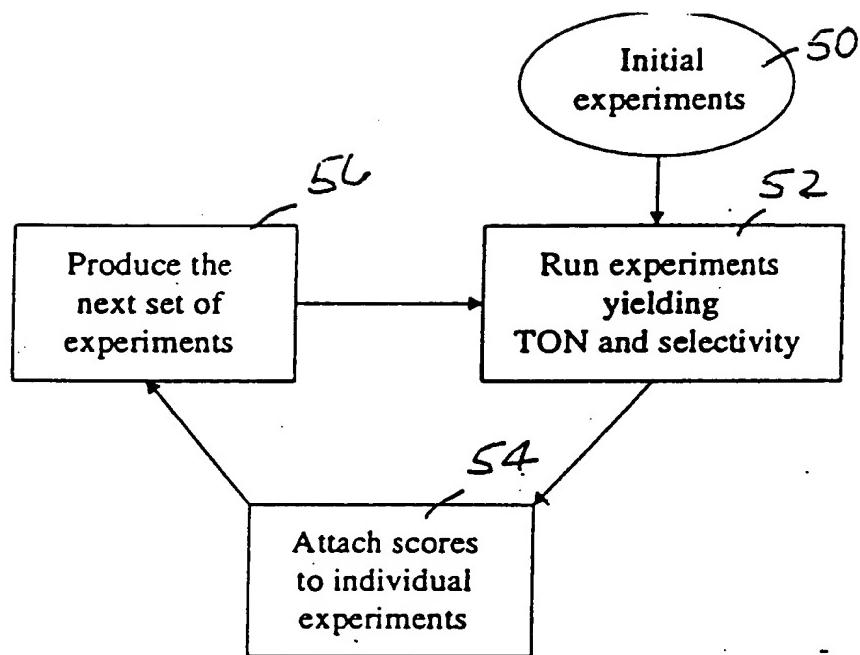


FIGURE 4

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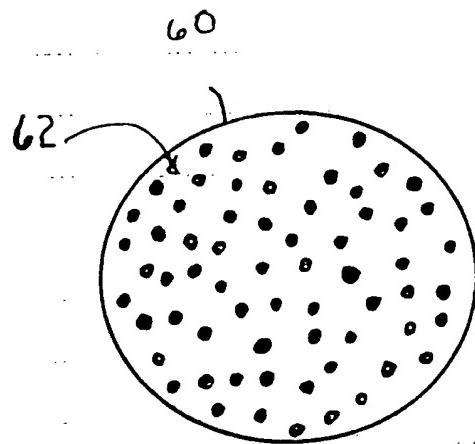


FIGURE 5

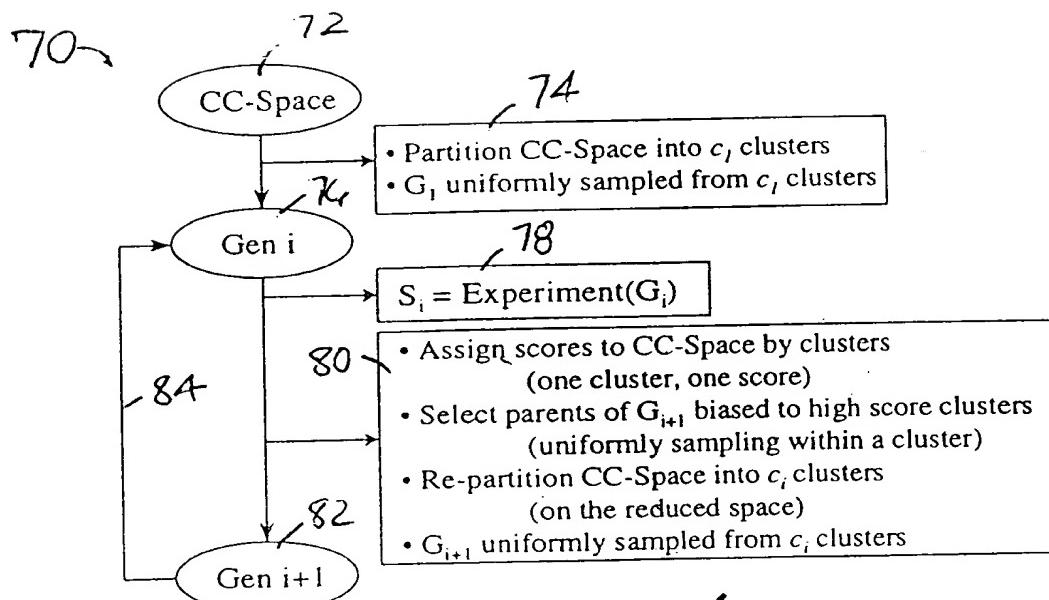


FIGURE 6

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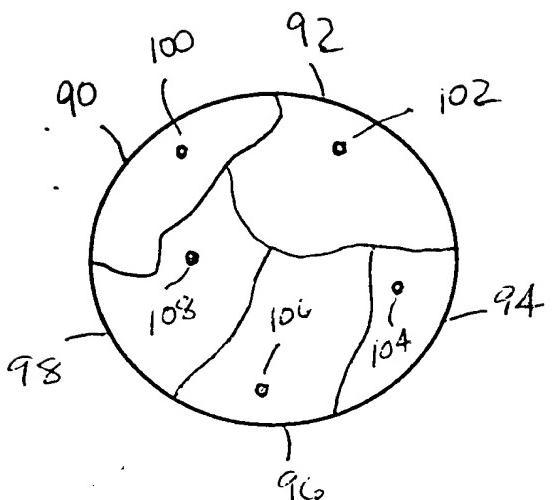


FIGURE 7

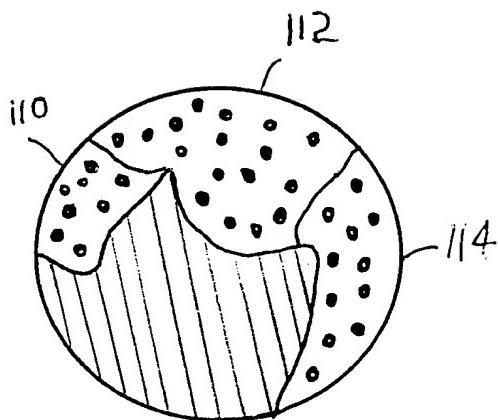


FIGURE 8

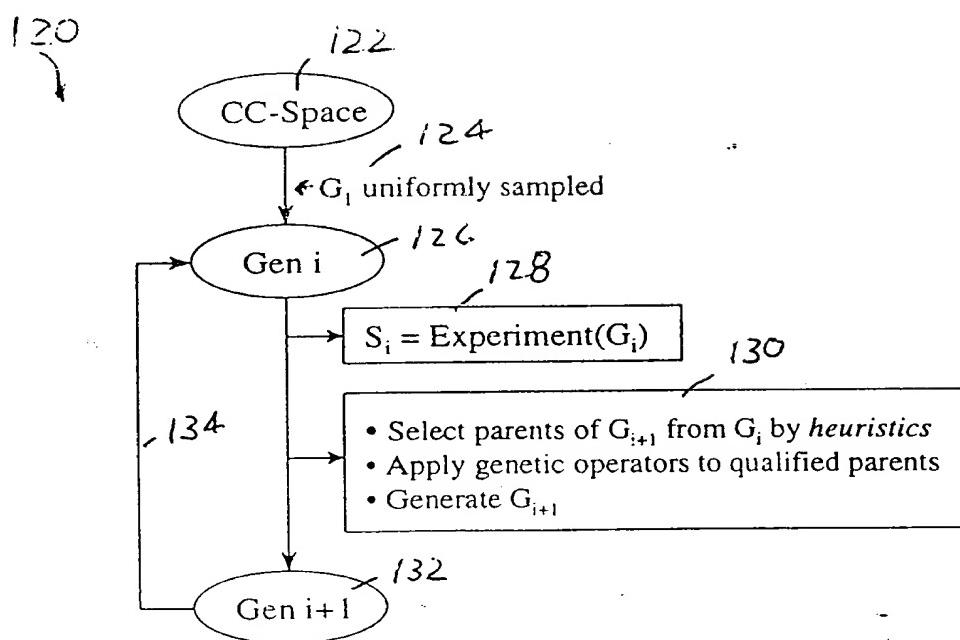


FIGURE 9

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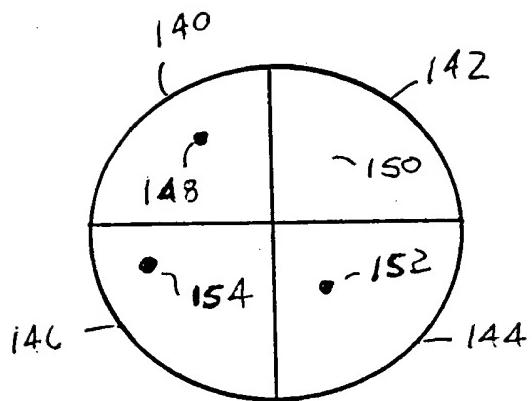


FIGURE 10

exp 1	Ca	Cu	Fe	...	Ru	Yb	
exp. 2	Cd	Eu	Fe	...	Yb	Zn	
Exp. 3	Gd	IR	La	...	Ni	Ru	
:	:	:	:		:	:	
:	:	:	:		:	:	
:	:	:	:		:	:	
:	:	:	:		:	:	

FIGURE 11

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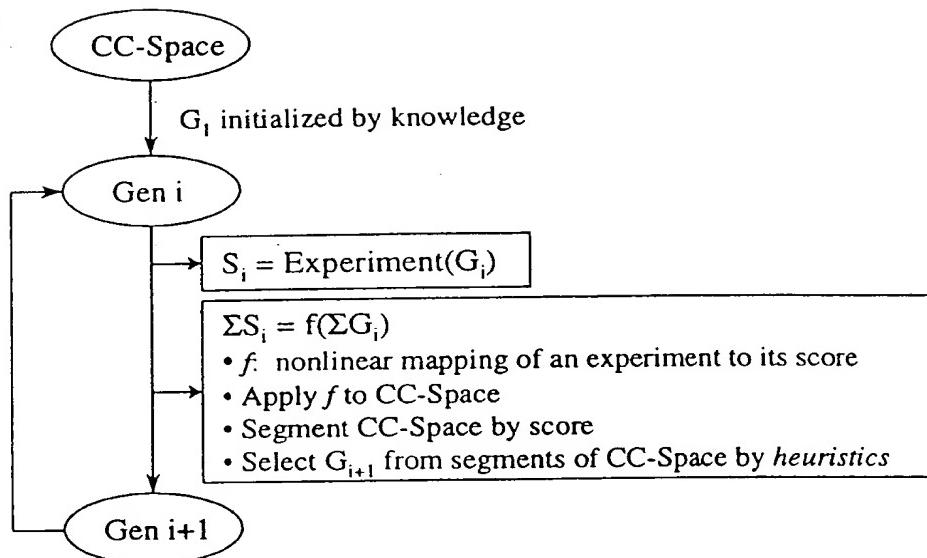


FIGURE 12